



## PIER Energy System Integration Program Area

### Knowledge-Based Customer Metering

**Contract #:** 100-98-001 **Project #:** 19

**Contractor:** Electric Power Research Institute (EPRI)

**Subcontractors:** Advanced Systems Associates: Hypertek, Inc.: Plexus Research, Inc. : Arizona State University

**Project Amount:** \$266,500

**Match Amount:** \$1,165,930

**Contractor Project Manager:** Dave Richardson (650) 855-2331

**Commission Contract Manager:** Thomas Tanton (916) 654-4930

**Status:** Completed

#### Project Description:

The purpose of this project is to provide electricity consumers with intelligent, time-of-use electric meters with built-in communications to enable utilities and their customers to utilize innovative activities such as automatic meter reading and energy utilization analysis. An important part of industry restructuring is customization of service—providing new choices and new benefits to individual clients. Some customers may be attracted by new ways to lower their electricity bills, while others are already demanding premium power quality. Beyond the differentiation of electricity service, new opportunities are also arising for convergence of multiple utility services—including gas, telephone, home security, and Internet access—through a single provider. In each of these areas, more sophisticated customer interface technology will be needed to meet the data collection and communications requirements of the utility service revolution with customers and suppliers benefiting from detailed load and billing information. New meter technology applications are being developed using the EPRI collaborative research approach to reduce development costs and risks. New products developed during these projects will be available to members for beta testing and at preferential pricing when the product has been commercialized. A prepayment meter is under development to give customers the flexibility of prepaying specific sums, just as telephone cards are now doing. A non-intrusive appliance load monitoring (NIALMS) module will be developed to provide a better understanding of residential energy usage leading to improved time of day pricing service. Tamper detection and research hold out the promise of reducing the number of billing irregularities. This EPRI target also develops market research into new metering service packages. Members will have an opportunity to participate in the research and select the target customers and demographics. Market data and analysis developed during these projects will be available to members for early adoption.

#### This project supports the PIER Program objectives of:

- Improving the quality of California's electricity by providing advanced meters with the intelligence, flexibility, and communication capability to allow automated meter reading, real-time pricing, and energy management services.
- Improving the energy cost/value of California's electricity by enabling the delivery of value-added electricity services to customers through advanced meters.

**Proposed Outcomes:**

1. Produce a commercial product—the SE-240 electronic residential meter—which is cost competitive with existing meters on an evaluated basis, while providing an array of additional services.
2. Develop information on residential customers' responses to new types of services made possible by advanced meters and communications systems.
3. Develop information on metering technologies and their applications to provide maximum choice and value to customers.

**Actual Outcomes:**

1. SE-240 electronic residential meter.
  - Prototypes of the meter were field-tested by 47 utilities, and 19 vendors were engaged in the manufacture of plug-in modules. A technical progress report was published.
  - A prototype meter was released with an internal disconnect switch to be used for remote disconnect to prevent lost revenue.
2. Information on customers' responses to new services.
  - A comprehensive review was published of available information on prepayment metering in North America, including business issues, customer acceptance, regulatory issues, and available products.
  - A report was published identifying new energy services being offered today in residential and commercial markets by electric utilities and energy service companies.
3. Information on metering technologies.
  - Up-to-date information on business issues and technology developments was compiled on the Metering Industry and Product Development web site.
  - Field audits were conducted and a report published on metering revenue losses due to theft, incorrect meter installation, and meter malfunction.
  - Support was provided to national standards setting organizations for open architecture for metering design. The minutes were published of the ANSI C12 Committee Meeting.

**Project Status:**

The Commission's participation in this target ended as of December 31, 1999.